

XIII. *The full grown larva of Lycaena euphemus Hb.* By  
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PLATE XI.

AN unfortunate illness prevented my giving any proper attention to my ants' nests containing the larvae of *L. euphemus* during last winter. I fully expected that the result would be complete failure with them.

The failure proved to be very serious, but as a modified success, one larva actually reached the pupal stage, and as I got drawings of the larva made by Mr. E. C. Knight, it seems desirable to report the results, meagre as they are, in continuation of the record in last year's Transactions (p. 450).

The first note I made at the end of January reported one larva of *L. euphemus* dead, and that the disappearance of ant brood suggested that the larvae fed during the winter. Later, in February, this was confirmed by the ant brood being nearly exhausted.

On February 14th it is noted that the larvae are usually nearer the ant brood than previously, and are occasionally seen to be moving. There are also notes this month of advancing disease in the larvae of *L. euphemus*, small black patches appearing on them. In one nest the larvae are reported as looking well. They did not, however, receive adequate attention, and ant brood was scarce, though I have to thank Mr. Donisthorpe and Captain Purefoy for assistance on this point.

In the autumn I had found nests of *Myrmica scabrinodis* practically without brood, and up till June none of my correspondents met with any. The following are my notes from this time.

June 6th.—Since last note the history has been one of continuous disaster, the larvae having died off at intervals from black spot disease, whatever that may be, the result, I think, of their having at times been too damp—at any rate, broadly to want of proper attention during my illness. There is to-day one larva left in the *M. laevinodis* nest that had originally four larvae. This larva has some black marks in the honey-gland region and in the

prothorax. It has, however, distinctly grown in the last few days; a week ago, it seemed still of hibernating size. It is now 10 mm. in length and very distinctly thicker.

June 8th.—*L. euphemus* looks larger and has got rid of the black mark on prothorax. Its colour is decidedly paler; the tint is flesh-colour, but is perhaps rather darker than is usually called flesh-colour, a pale faintly brownish pink.

June 10th.—Larva growing; it is 11 mm. long, 4 wide and 3.5 high, rather hexagonal on cross-section, the two sub-dorsal elevations, the lateral flanges, and presumably the prolegs, being about equidistant elevations; only a very casual glance would regard the larva as cylindrical; the colour is hardly paler than on 8th. It has none of the original longer hairs of full length, only, indeed, a few stumps, of which two or three are nearly half length of original hairs; the finer hairs show under lens as a minute dark dusting. The disturbance of examining the larva, led to its showing some activity in moving about.

June 12th.—The *L. euphemus* larva is growing and looks well, although the black mark persists near the honey-gland and is accompanied by slight distortion of the segment. The attitude or, rather, position of the larva since it really began to feed is quite characteristic and identical with that of the young larva in the autumn, viz. just outside the heap of ant grubs. Just now, for instance, it is on the side of the nest head downwards, with the head touching or almost touching the upper examples of the ant grubs piled up in a corner of the nest. It has always been very rare and apparently accidental to see a larva of *L. euphemus* in any degree amongst the ant grubs.

June 14th.—13 mm.  $\times$  4 mm., larger, paler, less pink, has a dirty look, chiefly if not entirely due to the minute dark skin points; the black on 7th and after segments still looks very threatening. The larva moves about with some activity (for a *Lycæna*) always outside brood nest.

June 17th.—Larva figured by Mr. E. C. Knight. The larva, the only one surviving, has a good deal of black marking and deposit on 7th abdominal segments and on those behind, 8th, 9th, and 10th, with apparently a little deformity. Referring to the analogy of *L. alcon* and to the structure of this same larva, when entering hibernation in this same instar, I persuaded Mr. Knight to omit the

black mark and figure the larva as without it, though this was contrary, apparently, if not really, to his principle of never drawing anything that he did not actually see.

The larva is given to "hunching," *i. e.* contracting and thickening, so that being about 15 mm. when extended, at rest it is often only 12 mm. and nearly 5 mm. in diameter especially in the abdominal segments, which are thickest at all times, but especially when "hunched."

The colour is now very pale, so that it is difficult to say that it is really pink, such colour as there is being really due to the now well-separated, stellate points or bases of abortive hairs (many being probably lenticles) well seen in photograph of skins of larvae in *Trans. Ent. Soc.*, 1919. These prevent the larva having the appearance of a very delicate skin, showing fat bodies, etc., as in *L. alcon*; but the conspicuousness of the dorsal vessels and its pulsations suggest that the delicacy and transparency of the skin is essentially as in *L. alcon*. The subdorsal eminences on 2nd, 3rd, 4th, 5th, and 6th abdominal segments are less marked than in the hibernating stage, owing to the general enlargement and stretching of the skin, the transverse section being now nearly circular instead of (seen dorsally) with a dorsal flatness apart from the eminences. The most notable change in the proportions of the larva is, that the first abdominal segment, instead of being small and weak, is much like the others, though with a little imagination it may be held to look just appreciably narrower. Here and there are stumps of the long hairs that the ants bit off in the early autumn days.

June 19th.—The larva has stationed itself at the top of the side of the nest. It was supposed to be not quite full grown, but it may be so and resting for pupation. The black mark on abl. 7 makes one not too hopeful of this being successfully accomplished.

June 20th.—In same position; no enlargement of thoracic segments.

June 21st.—Thoracic segments distinctly swollen. The larva was resting horizontally on the side of the nest near the top, and the ants have been more about it than normally; since yesterday they have put black material about the spiracular regions of the upperside. This would not wash off with water—another handicap to its due pupation.

June 22nd.—*L. euphemus* is found this morning to have

pupated satisfactorily, the cast skin is attached to the last segment, but not more than often occurs in Lycaenids. It will probably be removable, but the pupa is too immature to meddle with.

June 24th.—The pupa at first pale (very pale chitinous) has got very dark, and the wing-cases are becoming depressed. It is, therefore, obviously dead, due no doubt to injury in trying to throw off the black material of 7th segment. This unfortunately makes a figure of it unattainable.

My materials for describing the pupa of *L. euphemus* consist of the collapsed and discoloured pupa obtained from my larva, and a nearly or quite complete, but somewhat disintegrated, empty case obtained by Mr. Powell. Of *L. alcon*, with which to compare them, I have an empty case, a dead pupa with butterfly fully developed, and a collapsed case. I should have liked to have mounted portions of these and presented photographs of them, but the deficiency of specimens and other difficulties prevent this. So far as I have been able to examine them, I have not detected any differences between the two species that could be so demonstrated, though there are most probably some small differences in hairs and lenticles. The figures of *L. alcon* (Trans. Ent. Soc. 1919, Pl. XXIII) might fairly be taken to represent *L. euphemus* also, so far as such magnification enables them to be represented. The only difference discoverable with a hand lens, and this might possibly not hold in a longer series, is as regards the spiracles, which in *L. alcon* are low dark chitinous cones, and in *L. euphemus* are higher cones, only darkly chitinous at top, and with a margin of delicate-looking white tissue.

The pupae are about 11 to 12 mm. long, of the same form and colour as in the above-mentioned plate, and are unfortified by any definite forked or spiculate hairs. There is no scar of honey-gland.

#### EXPLANATION OF PLATE XI.

Three aspects of full-grown larva of *Lycaena euphemus* Hb.  
 4. It may be compared with that of *L. alcon* (Trans. 1919, Plate XXIII). For details of skin structure see Trans. 1919, Plates XXXIV *et seq.* It will be noted that the long hairs shown on Plate XXX (Trans. 1919) are represented by only a few stumps. (See Trans. 1919, p. 464.)